

# PATENT SPECIFICATION

1,123,402

DRAWINGS ATTACHED.

The inventors of this invention in the sense of being the devisers thereof within the meaning of Section 16 of the Patents Act 1949 are:— ERNST LIESER, of Stuttgart-Vaihingen, Fuggerstrasse 1, HORST SIMON, of Fellbach b. Stuttgart, Christofstrasse 56, EDWIN MULLER, of Stuttgart-Hedelfingen, Bächlenweg 19, and KURT STEISSLINGER, of Stuttgart-Hedelfingen, Friedrichshafener Strasse 6, all of Germany and all of German Nationality.

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## COMPLETE SPECIFICATION.

### Photographic Camera.

We, EASTMAN KODAK COMPANY, a Company organised under the Laws of the State of New Jersey, United States of America, of 343 State Street, Rochester, New York 14650, United States of America (Assignees of KODAK AKTIENGESELLSCHAFT), do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The invention relates to a photographic camera for use with film supplied in rolls, films in cartridges or cassettes, respectively, with or without spool, and particularly to the manner of loading film in the camera and preparing the camera for operation.

In most known cameras, the film leader must be manually secured to the take-up spool, either before or after insertion of the film into the camera. This process is troublesome and requires a certain amount of manual dexterity. In order to avoid this shortcoming, film magazines were created having film supply and take-up chambers joined by means of connecting portions and wherein the film supply chamber contains the preloaded film and the exposed film is fed into the film take-up chamber. The use of these film magazines is limited, however, to certain camera models which are designed specifically for this purpose. The same holds true for the use of a spool-less

film cassette from which film is drawn and fed by pushing into a similar spool-less film cassette. 35

One of the objects of the invention is to simplify the insertion and attachment of conventional films in cameras when preparing the cameras for operation. In photographic cameras adapted for use of film supplied in rolls, whether with or without spools, this object is accomplished according to the invention by inserting the leader of the film edgewise into the take-up spool rather than threading it through endwise as is the arrangement in cameras of the prior art. Preferably, the leader of the film will project beyond the core of the take-up spool, as it is being inserted into the take-up spool and will also project beyond the spool chamber which is to house the exposed film. The projecting portion is placed into the spool chamber by a structure mounted for movement relative to the spool chamber, such as the camera back or a part associated therewith, and then the leader is wound around the core of the take-up spool along with the film when the film advancing mechanism is operated. By suitably designing both the take-up spool and the camera housing in accordance with the invention, the insertion and attachment of film is simplified so that the camera is substantially as easy to load as those cameras which are designed especially for use with film magazines. 40 45 50 55 60

Other objects of the invention will be

come evident from the description which follows, including reference to the accompanying drawings in which:

Fig. 1 is a perspective view of a photographic camera with the back or cover open, a film leader passing through a slot in a core of the take-up spool with a portion of the leader extending beyond the take-up spool chamber and partly over one end of a cover or back of the camera.

Fig. 2 is a fragmentary perspective view of an alternative embodiment and illustrates a camera wherein the film leader can be inserted into one of two possible slots or openings in the take-up spool;

Fig. 3 is a view similar to Fig. 2 but illustrating the camera back or cover in half closed position and the film leader being folded thereby into the take-up spool chamber;

Fig. 4 illustrates still another embodiment of the take-up spool in association with part of a spool drive or film advancing mechanism; and

Fig. 5 is a sectional view of the partly represented take-up spool illustrated in Fig. 4.

Referring to the drawings, in Fig. 1, a camera back or cover 3 is mounted on a housing 1 of the camera and is pivotable around a hinge 2. A take-up spool 4 is located within a spool chamber 1a and may be permanently or detachably connected to the camera housing 1. A chamber 1b lies at the opposite end of the housing from spool chamber 1a and serves to house a film cassette 5 containing the film 6. It will be appreciated, however, that the film could be provided in a roll within chamber 1b rather than in a cassette, and this would still be within the scope of the invention. In the area of exposure plane framing unit 1c, which is disposed between the chambers 1a and 1b, the film is guided by bevelled surfaces 1d and within the channel formed between a pressure plate 7 and a surface 1e surrounding the exposure plane framing unit 1c and constituting the exposure plane defining means. The camera back 3 is provided with arcuate portions 3a which preferably extend from the pressure plate 7 to the front wall 3b of the camera back or cover.

In the embodiment illustrated in Fig. 1, the take-up spool 4 is provided with an open ended slot 4a, the end 4b of which is wider than the remainder for facilitating the insertion of a film leader. The leader 6a of the film 6 which is inserted into the slot 4a projects beyond the spool 4 and preferably also extends past the spool chamber 1a. A stop (not shown) which may be disposed on the camera and/or on the take-up spool serves to define the position of the film leader 6a of the film relative to the

exposure plane framing unit 1c. The width of the leader 6a of the film can be scanned by means whereby the film sensitivity or a characteristic of the film can be fed into the camera and evaluated by exposure measuring and/or control systems. Such a measuring or control system is disclosed in Patent Specification No. 1,062,273, and scanning of the width of the film, can thereby provide an input of the film sensitivity and/or type of film into the camera. It would also be possible to control one of several exposure value setting members, such as the diaphragm and/or the exposure time, by means of the aforementioned film scanning device.

A handle 10 serves to initiate the film advancing and shutter cocking operation in a conventional manner.

The slot in the take-up spool 4 should be approximately parallel to the film guide or channel in the area of the exposure plane framing aperture unit 1c between bevelled surfaces 1d when the leader 6a of the film is to be inserted. The insertion slot 4a can be automatically moved into this position by a previous film 6 when it is rewound. It is also possible to secure the spool 4 so that the insertion slot will be in the proper position by some means disposed on or in the camera which could be controlled by the opening movement of the camera back or cover 3. This could be effected, for example, by a detent which would be disengaged when the camera back is closed or when the leader 6a of the film is inserted into the take-up spool. The employment of such detent would have the advantage that, when the slot 4a is in a position which is unfavourable for insertion of the film, the position of the slot could be corrected by turning the take-up spool 4 while the camera back 3 is open. For facilitating the insertion and winding operation, the core of the take-up spool preferably has a larger diameter than the core of the usual take-up spools.

The camera back or cover 3 is mounted on the camera housing 1 on the side of the spool chamber 1a for housing the exposed film so that the cover can be pivoted parallel to the axis of take-up spool 4. However, when the camera back 3 is fastened in a different manner, it is possible to provide the spool chamber 1a with means which effect the reinsertion of the leader 6a of the film into the spool chamber 1a prior to initiating the film advancing operation. This may be accomplished either by manual operation or by a process necessary for the operation of the camera.

The insertion of the film and the operation of the camera are effected as follows: The cassette 5 containing film 6 is placed in the chamber 1b of the camera housing 1 when the camera back or cover 3 is opened.

The leader 6a is then manually grasped and drawn out from the cassette so that the leader can be inserted edgewise into the take-up spool 4 through the slanted opening of slot 4a by a sliding edgewise motion. In the area of the spool chamber 1a of the take-up spool 4, the camera housing 1 is designed with a cut-away portion adjacent one end of the take-up spool as illustrated in Fig. 1, so that the insertion of the leader 6a into slot 4a can be effected in the manner described. A portion of the leader will then project beyond the opposite side of the camera housing. The camera back 3 is then closed. As the camera back is being closed the projecting portion of leader 6a will be placed into the spool chamber 1a by the camera back 3 or by the arcuate portions 3a, respectively. The arcuate portions 3a also prevent the leader 6a of the film from moving below the pressure plate 7. The position of the leader of the film may be defined or registered, the film sensitivity may then be fed into the camera, and the take-up spool may be released from its detent when the camera back is closed, all in the manner described.

During the closing operation the pressure plate 7 and the bevelled surfaces 1d assist in moving the film 6 which may have been laterally displaced with respect to the exposure plane framing unit 1c, into the correct position with respect to the film guide or channel. When the operating handle 10 is moved for initiating the film transport and shutter cocking operation, the take-up spool 4 is turned in clockwise direction and a leader 6a of the film wound around the core of the take-up spool 4 along with the film 6. When the exposed film 6 is re-wound into cassette 5, the leader 6a of the film brings the position of the slot 4a automatically in alignment with the film guide or channel in the camera. It is in this position that the slot may be arrested for future loading.

In Figs. 2 and 3 another embodiment is illustrated wherein the spool 4 is provided with a pair of slots or openings 4a, having ends 4b which are wider at the front side for facilitating the insertion of the film leader. Obviously the number of slots may be greater than that shown in Fig. 2.

In Figs. 4 and 5 a further embodiment is shown wherein a take-up spool 20 is provided with slots 20a. The insertion opening 20b of the slots 20a is located on a peripheral surface 20c of the take-up spool. The slots 20a are inclined toward the axis of the take-up spool 20 at least in the area of the insertion openings 20b. Beyond the inclined portions, the slots 20a preferably extend parallel to the axis of the take-up spool 20, and the front surfaces 20d form a guide portion for defining the position of

the leader 6a of the film. As is shown in the sectional view of take-up spool 20 (Fig. 5) the slots 20a can be provided with a sharp bend 20e for attaching the leader 6a of the film to or in the take-up spool, respectively.

The handle 10, shown in Fig. 4, serves to initiate the film advancing and shutter cocking operation and is connected with a toothed rack 11. The rack 11 is in engagement with a gear 12 and drives a gear 13 and spool engaging portions 13a. The engaging portions 13a mesh with a slot 20f of the take-up spool, thus producing a connection between the film transport or advancing mechanism and the take-up spool 20 for rotatably driving the spool. When the handle 10 is returned to its initial position after the transport or film advancing operation and/or during the rewinding operation, a coupling (not shown) between the handle 10 and the take-up spool 4 may be disconnected in a manner well known.

The operation of the embodiment illustrated in Figs. 4 and 5 differ from those illustrated in Figs. 1, 2 and 3 in that the leader is inserted by edgewise motion along the top surface of the spool.

The subject matter of the present application is related to that of our copending patent application No. 36843/65 (Serial No. 1,123,403).

#### WHAT WE CLAIM IS:—

1. A photographic camera comprising a housing having an exposure plane framing means and wall means defining a pair of film chambers which are located on either side of the framing means for receiving a roll of film provided with a leader extending from the roll, and a take-up spool and wherein the take-up spool has a slot extending transversely therealong, at least a major portion of the slot lying generally parallel to the axis of rotation of said spool, the slot being open-ended and a portion of the wall means of the housing adjacent the open end of the slot being cut away such that the leader may be engaged in the spool slot by moving the leader edgewise into the slot in a direction generally axially of the spool.

2. A camera as claimed in Claim 1 further including means mounted for movement relative to the take-up spool chamber and arranged, upon such movement, to engage and fold into the take-up spool chamber a portion of the leader which extends beyond the spool slot and the spool chamber.

3. A camera as claimed in Claim 2 wherein a cover member for the take-up chamber movably mounted on said camera adjacent the take-up chamber includes surface formations constituting the means for

- folding the portion of the leader into the chamber, the surface formations being positioned to engage the portion of the leader upon movement of the cover to close the camera.
4. A camera according to Claim 3 wherein the surface formations comprise a pair of arcuate guide portions positioned in the cover adjacent the take-up chamber in the housing.
5. A camera according to Claim 1, 2, 3 or 4 wherein the open end of the slot is provided on a peripheral wall surface of the take-up spool.
6. A camera according to any preceding claim wherein at least two of the slots are provided.
7. A camera as claimed in Claim 6 wherein either of the slots is alignable with the cut-away portion in the wall means by rotating said take-up spool so that the leader may be inserted into the aligned opening by the edgewise movement.
8. A camera according to any preceding Claim wherein the or each slot is provided with a sharp bend to assure positive frictional engagement with the leader.
9. A photographic camera substantially as hereinbefore described with reference to and as illustrated in Fig. 1 or Fig. 1 as modified by Figs. 2 and 3 or by Figs. 4 and 5 of the accompanying drawings.

L. A. TRANGMAR,  
Patent Agent.

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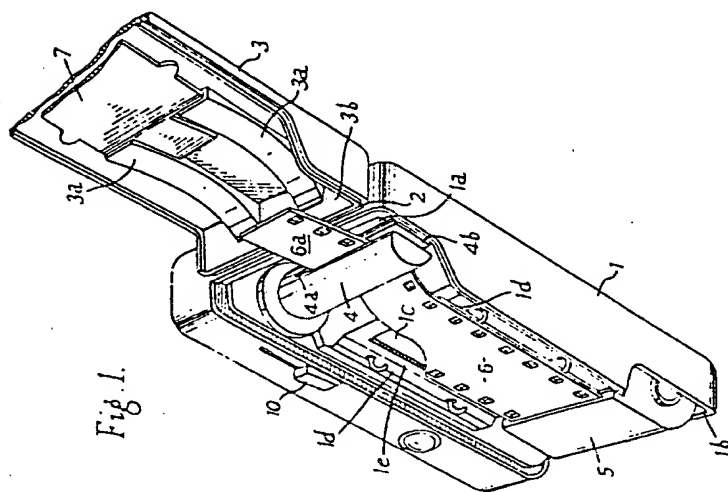


Fig. 1.

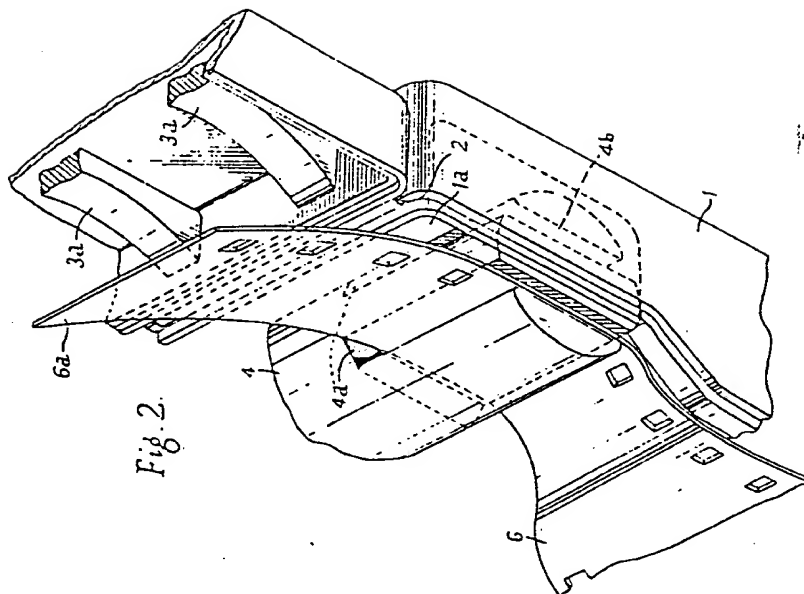


Fig. 2.

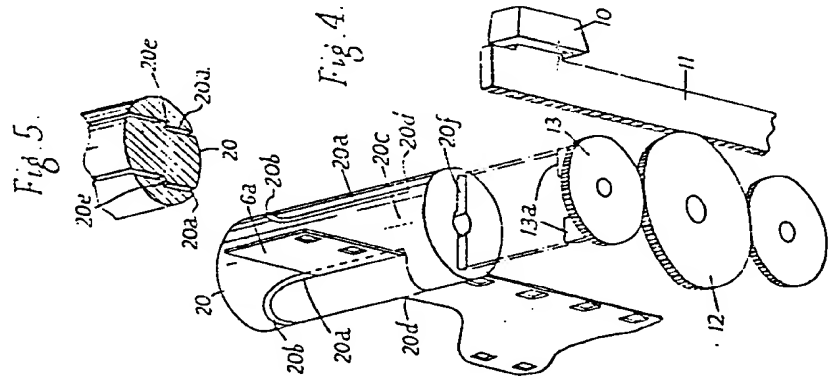
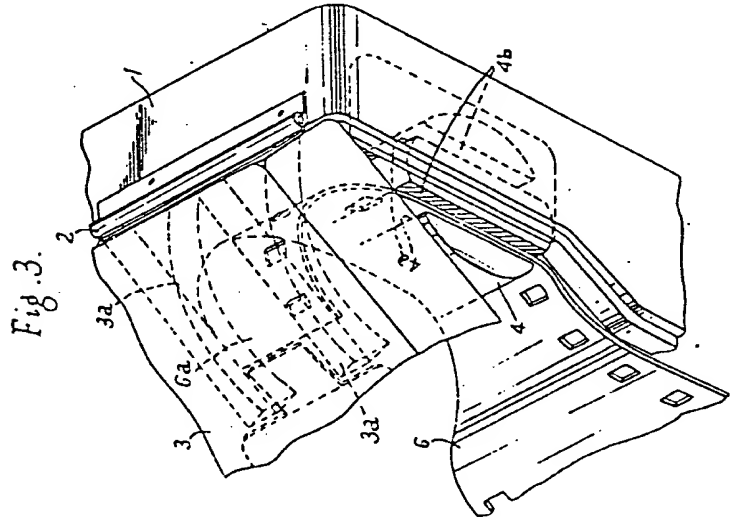


Fig. 5.

